

Application No. 09/751,155
Amendment dated December 9, 2003
Reply to Office Action of August 14, 2003

REMARKS/ARGUMENTS

Claims 1-10 are pending in the application; the status of the claims is as follows:

Claim 6 is objected to because of informalities.

Claims 1-3, and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,626,918 to Morisawa ("Morisawa") in view of U.S. Patent No. 5,860,034 to Hori ("Hori").

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori as applied to claim 1 above, and further in view of U.S. Patent No. 6,249,650 B1 to Iwamoto ("Iwamoto").

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori as applied to claim 1 above, and further in view of U.S. Patent No. 6,266,083 B1 to Sakaegi et al ("Sakaegi").

Claims 4 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori as applied to claim 9 above, and further in view of U.S. Patent No. 5,150,215 to Shi ("Shi").

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori, in further view of Sakaegi as applied to claim 6 above, and further in view of Shi.

Claim 5 is objected to as being dependent upon rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

The acknowledgement, in the Office Action, of a claim for foreign priority under 35 U.S.C. § 119(a)-(d), and that the certified copy of the priority document has been received, is noted with appreciation.

The indication in the Office Action that the Examiner has objections to Figs. 1 and 2 of the drawings under MPEP 608.02(g), is noted. Revised formal drawings are being submitted concurrently.

Claims 1, 6, 9, and 10 have been amended to provide proper antecedent basis; to correct inadvertent punctuation errors; or to amend the grammar to make the claims more understandable. These changes are not necessitated by the prior art, are unrelated to the patentability of the invention over the prior art, and do not introduce any new matter.

35 U.S.C. § 103(a) Rejections

The rejection of claims 1-3, and 9 under 35 U.S.C. § 103(a), as being unpatentable over Morisawa in view of Hori, is respectfully traversed based on the following.

Claim 1 is directed to a camera comprising in relevant part: a light splitter which is movable between a first position to divide light transmitted through the taking lens to the image sensor and the finder and a second position in which the light splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor; a driver which moves the light splitter to the first position and the second position; and a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position.

According to the camera claimed in claim 1, a light splitter is movable and positionable between: a first "downward" position, which divides the light transmitted through the taking lens between the image sensor and the finder; and a second "retracted" position, which removes the light splitter from the path of the light transmitted through the taking lens and instead directs the light from the taking lens only to the image sensor. The light splitter is controlled between a semi-transparent state, which allows light to pass therethrough (when in the first "downward" position), and a blocking state, which prevents light from passing therethrough (when in the second "retracted" position). That is, when the movable light splitter is in the second "retracted" position, the light splitter is in a blocking state and blocks light such that light transmitted through the taking lens is prevented from reaching the view finder and light from the view finder is prevented from reaching the image sensor when photographing is taking place. The semi-transparent state of the light splitter allows light transmitted from the taking lens to be transmitted to both

the view finder and the image sensor for viewing by the photographer at both positions prior to the shutter button being depressed and photographing taking place.

In contrast to the camera claimed in claim 1, Morisawa discloses a single lens reflex camera having a pivotal reflecting mirror 14. When the pivotal reflecting mirror 14 is in an upward "retracted" position, light entering from an objective 11 is directed to a photoelectric pickup device 16. When the pivotal reflecting mirror 14 is in a "downward" position, light entering from the objective 11 is directed to a compensation plate 30 of an optical finder system 15. That is, the pivotal reflecting mirror 14 does not act as a beam splitter. The compensation plate 30 comprises a semi-transparent coating 30a cemented between two pieces of optical material forming a semi-transmissive, semi-reflective surface. The semi-transparent coating 30a acts as a beam splitter splitting light in both a first direction and a second direction. Light entering the compensation plate 30 is split by the semi-transparent coating 30a and directed both: in the first direction to a focusing plate 17 and then to an ocular 19 through pentaprism 18; and in the second direction, to a photometric element 31, where a signal is generated representative of the intensity of the light passing through the objective 11. The disclosed purpose of splitting the light in this manner is to direct a portion of the light to the photometric element 31 in order to measure the amount of light (and thereby the intensity of the light) of the object to be photographed regardless of the diffusion caused by the focusing plane of the focusing plate and to thereby produce an output signal proportional to the amount of light passing through the objective 11. The disclosed purpose of pentaprism 18 is to provide an image to the ocular 19 in a same orientation as it appears at the objective 11. Thereby, a photographer may observe an erect image of the object coming through the objective 11 by viewing through the ocular 19.

According to Morisawa, when the pivotal reflecting mirror 14 is in the downward position, the pivotal reflecting mirror 14 effectively blocks light directed from the objective 11 to the image sensor 16 and instead reflects it toward the finder optical system 15. Thus, the pivotal reflecting mirror 14 does not act as a light splitter as was asserted on page 9 of the Office Action. Instead, as discussed above, it is the semi-

transparent coating 30a of the compensation plate 30 which is adapted to split the light between the finder optical system 15 and the photometric element 31. The light splitter 30a of Morisawa is cemented to the compensation plate 30 and is thus not movable. Further, the light splitter 30a is not controlled between a semi-transparent state and a blocking state in any position or arrangement, as is recited by claim 1 of the present application.

In order to overcome the inadequacies of Morisawa, Hori is cited in combination therewith. Hori, which is directed to an eyepiece shutter for use with a camera, is cited as teaching that a liquid crystal shutter system placed within the optical path of the finder eyepiece can be used to prevent external light from entering into the main body of the camera through the finder eyepiece window at the time of metering operation and/or exposure. Hori is also cited as teaching that the shutter itself can be placed anywhere, so long as light entering from the finder eyepiece window can be prevented from arriving at the photometry light-receiving element.

In general, Hori discloses a movable shutter system for use with a camera having a movable major mirror. The shutter is disclosed to move in response to the pressing action of a shutter release button. However, according to Hori, it is the movable shutter 2 which prevents light entering the finder eyepiece window from arriving at the photometry light-receiving element and not the movable mirror. In one particular embodiment, Hori discloses the use of a pellicle mirror as the major mirror. A pellicle mirror is a thin, stretched plastic membrane cemented to a rigid supporting ring. It may be coated to act as a beamsplitter. The membrane is so thin that no perceptible image doubling appears in the reflected beam. While the pellicle mirror of Hori may act as a beam splitter, the pellicle mirror of Hori is disclosed not to swing up or down (i.e., not be movable from a first position to a second position). *Hori*, col. 8, lines 35-37. Further, Hori does not disclose or suggest controlling the light splitter (i.e., beam splitter) between a semi-transparent state and a blocked state. Thus, while the shutter of Hori can be controlled between a first state and a second state to prevent light from entering the main body of the camera through the finder eyepiece window when the shutter release button is depressed, Hori does not

disclose or suggest a light splitter which is movable between a first position to divide light transmitted through the taking lens to the image sensor and the finder and a second position in which the light splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor. Furthermore, because Hori does not disclose or suggest a movable light splitter or one that has a blocking state, Hori also does not disclose or suggest a driver which moves the light splitter to the first position and the second position, or a controller, which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. Additionally, because Hori teaches a controlled shutter for preventing light from the finder eyepiece window from entering the main body of the camera, there is no motivation in Hori to modify the major mirror to perform in this manner.

Because neither Morisawa nor Hori disclose or suggest at least one common element of claim 1, that being a light splitter which is movable between a first position to divide light transmitted through the taking lens to the image sensor and the finder and a second position in which the light splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor, the Office Action fails to make a *prima facie* case of obviousness. Therefore, claim 1 is not rendered obvious with respect to Morisawa or Hori, either singly or in combination.

Claims 2 and 3 depend from non-obvious independent claim 1. Additionally, claims 2 and 3 further limit claim 1. Because dependent claims are held to incorporate all of the limitation of the base claim from which they depend, claims 2 and 3 are not rendered obvious by Morisawa or Hori, either singly or in combination.

Claim 2 recites the camera according to claim 1 wherein said light splitter is a liquid crystal plate of variable transmittance. The Office Action asserts that the light splitter being a liquid crystal plate of variable transmittance is not consistent with the specification. However, page 10 lines 20-25 of the specification clearly provides for alternate constructions of the light splitting means. "For example, a liquid crystal plate having variable transmittance and a plurality of small pixels may be used as the liquid

crystal semi-transparent mirror 22.” Thus, a claim to the light splitter being a liquid crystal plate of variable transmittance is not inconsistent with the specification. Neither Morisawa nor Hori, either singly or in combination disclose or suggest the camera according to claim 1, wherein the light splitter is a liquid crystal plate of variable transmittance. Thus, for that reason as well, claim 2 is also not rendered obvious by Morisawa or Hori, either singly or in combination.

Claim 3 recites the camera according to claim 1, wherein said light splitter provides a liquid crystal plate having variable transmittance on a semi-transparent mirror. Neither Morisawa nor Hori, either singly or in combination disclose or suggest the camera according to claim 1, wherein the light splitter provides a liquid crystal plate having variable transmittance on a semi-transparent mirror. Thus, for that reason as well, claim 3 is also not rendered obvious by Morisawa or Hori, either singly or in combination.

Claim 9 is directed to a method to control a splitter which is provided in a camera and is movable between a first position to divide light transmitted through a taking lens to an image sensor and a finder and a second position in which the splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor, the method comprising the steps of: controlling the splitter to a semi-transparent state in the first position; and controlling the splitter to a blocking state in the second position.

As discussed above, the splitter 30a of Morisawa does not move between a first position and a second position. Instead, the splitter is a semi-transparent coating layer 30a cemented between two optical elements to form compensation plate 30. Further the splitter 30a of Morisawa is not controlled between a semi-transparent state and a blocking state. The coating remains in the semi-transparent state throughout photography.

While Hori suggests a splitter, the splitter is not disclosed or suggested to be movable. Thus, Hori does not disclose or suggest a movable splitter which is adapted to divide light transmitted through a taking lens to an image sensor and a finder and a second position in which the splitter is away from the light transmitted through the taking lens and

the light is directed only to the image sensor. Hori also fails to disclose or suggest controlling the splitter between a semi-transparent state and a blocked state.

Because neither Morisawa nor Hori disclose or suggest either of the steps of claim 9, including controlling the splitter to a semi-transparent state in the first position, and controlling the splitter to a blocking state in the second position, claim 9 is not rendered obvious by Morisawa or Hori, either singly or in combination.

Accordingly, it is respectfully requested that the rejection of claims 1, 2, 3, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori, be reconsidered and withdrawn.

The rejection of claim 8 under 35 U.S.C. § 103(a), as being unpatentable over Morisawa in view of Hori as applied to claim 1 above, and further in view of Iwamoto, is respectfully traversed based on the following.

Claim 8 depends directly from and further limits claim 1. As discussed above, claim 1 is not rendered obvious by Morisawa or Hori, either singly or in combination. Claim 8 recites a further limitation to a return switch which instructs the driver to return the light splitter to the first position from the second position. Specifically with respect to claim 8, Morisawa in view of Hori lacks a switch to move the light splitting device from the second position to the first position. In order to overcome the above stated inadequacies of the combination of references, the references are cited in combination and further in view of Iwamoto. Iwamoto is cited as teaching a camera with a mirror or "light splitting device" control switch that allows the user to manually change the position of the mirror or "light splitting device" between a first position and a second position. However, the mirror of Iwamoto does not function as a light splitter, but instead merely as a quick return reflective mirror. When the mirror is down or inclined, light is directed to the view finder optical system and not to the photoreceptor element. When the mirror is retracted, light is directed to the shutter curtain and thereby to the photoreceptor element. Iwamoto fails to disclose or suggest a light splitter which is movable from a first position to a

second position in which the light splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor. Further, Iwamoto fails to disclose or suggest a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. None of Morisawa, Hori, or Iwamoto disclose or suggest that a light splitter direct light only to the image sensor when the light splitter is in a second position, or a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. Therefore, claim 1 is not rendered obvious by Morisawa, Hori, or Iwamoto, either singly or in combination. Because claim 8 depends from and further limits claim 1, claim 8 is also not rendered obvious by Morisawa, Hori, or Iwamoto, either singly or in combination.

Accordingly, it is respectfully requested that the rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori as applied to claim 1 above, and further in view of Iwamoto, be reconsidered and withdrawn.

The rejection of claim 6 under 35 U.S.C. § 103(a), as being unpatentable over Morisawa in view of Hori as applied to claim 1 above, and further in view of Sakaegi, is respectfully traversed based on the following.

Claim 6 depends directly from and further limits claim 1. As discussed above, claim 1 is not rendered obvious by Morisawa or Hori, either singly or in combination. Claim 6 recites wherein the driver maintains the light splitter at the second position when the sensor is continuously sensing a plurality of images. Specifically with respect to claim 6, Morisawa in view of Hori lacks a light splitter that remains at a second position while the sensor continuously senses a plurality of images. In order to overcome the above stated inadequacies of the combination of references, the references are cited in combination and further in view of Sakaegi. Sakaegi is cited as teaching a system where a mirror retracts to a second position out of the way of the sensor's optical path while the sensor is sensing a plurality of images. However, whether or not this is true, Sakaegi fails to disclose or suggest that the mirror is a light splitter and that the light splitter is movable

from a first position to a second position in which the light splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor. Further, Sakaegi fails to disclose or suggest a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. None of Morisawa, Hori, or Sakaegi disclose or suggest that the light splitter direct light only to the image sensor when the light splitter is in a second position, or a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. Therefore, claim 1 is not rendered obvious by Morisawa, Hori, or Sakaegi, either singly or in combination. Because claim 6 depends from and further limits claim 1, claim 6 is also not rendered obvious by Morisawa, Hori, or Sakaegi, either singly or in combination.

Accordingly, it is respectfully requested that the rejection of claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori as applied to claim 1 above, and further in view of Sakaegi, be reconsidered and withdrawn.

The rejection of claims 4 and 10 under 35 U.S.C. § 103(a), as being unpatentable over Morisawa in view of Hori as applied to claim 9 above, and further in view of Shi, is respectfully traversed based on the following.

Claim 4 depends directly from and further limits claim 1. As discussed above, claim 1 is not rendered obvious by Morisawa or Hori, either singly or in combination. Claim 4 recites wherein the light splitter provides a display which is able to display an image sensed by the image sensor. Specifically with respect to claim 4, Morisawa in view of Hori lacks a light splitter that provides a display which is able to display an image sensed by the image sensor. In order to overcome the above stated inadequacies of the combination of references, the references are cited in combination and further in view of Shi. Shi is cited as teaching a mirror system which can provide a display to both an image sensor and a user. However, whether or not this is true, as with Iwamoto and Sakaegi above, Shi fails to disclose or suggest that the reflective mirror is a light splitter or that the light splitter is movable from a first position to a second position in which the light splitter

is away from the light transmitted through the taking lens and the light is directed only to the image sensor. Further, Shi fails to disclose or suggest a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. None of Morisawa, Hori, or Shi disclose or suggest that the light splitter direct light only to the image sensor when the light splitter is in a second position, or a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. Therefore, claim 1 is not rendered obvious by Morisawa, Hori, or Shi, either singly or in combination. Because claim 4 depends from and further limits claim 1, claim 4 is also not rendered obvious by Morisawa, Hori, or Shi, either singly or in combination.

Claim 10 depends directly from independent claim 9. As discussed above, claim 9 is not rendered obvious by Morisawa or Hori, either singly or in combination. Claim 10 recites the step of displaying an image sensed by the image sensor on the splitter when the splitter is in the second position.

Specifically with respect to claim 9, Morisawa in view of Hori lacks a light splitter that provides a display which is able to display an image sensed by the image sensor. In order to overcome the above stated inadequacies of the combination of references, the references are cited in combination and further in view of Shi. Shi is cited as teaching a mirror system which can provide a display to both an image sensor and a user. However, whether or not this is true, as with Iwamoto and Sakaegi above, Shi fails to disclose or suggest that the reflective mirror is a light splitter or that the light splitter is movable from a first position to a second position in which the light splitter is away from the light transmitted through the taking lens and the light is directed only to the image sensor. Further, Shi fails to disclose or suggest a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. None of Morisawa, Hori, or Shi disclose or suggest that the light splitter direct light only to the image sensor when the light splitter is in a second position, or a controller which controls the light splitter to a semi-transparent state in the first position and a blocking state in the second position. Therefore, claim 9 is not rendered obvious by Morisawa,

Hori, or Shi, either singly or in combination. Because claim 10 depends from and further limits claim 9, claim 10 is also not rendered obvious by Morisawa, Hori, or Shi, either singly or in combination.

Accordingly, it is respectfully requested that the rejection of claims 4 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori as applied to claim 9 above, and further in view of Shi, be reconsidered and withdrawn.

The rejection of claim 7 under 35 U.S.C. § 103(a), as being unpatentable over Morisawa in view of Hori, in further view of Sakaegi as applied to claim 6 above, and further in view of Shi, is respectfully traversed based on the following.

Claim 7 depends from claim 1 through claim 6. Each of the references has been discussed previous in greater detail in relation to rejections of claim 1. Thus, for conciseness, a full discussion of each of the references will not be repeated here. As discussed in great detail above, claim 1 is not rendered obvious by a combination of Morisawa, Hori, and Sakaegi, or a combination of Morisawa, Hori, and Shi. Page 14 of the Office Action states that the combination of Morisawa, Hori, and Sakaegi lacks a method that “displays an image sensed by the image sensor on the splitter when the splitter is in the second position”. Shi is cited in combination therewith in an attempt to overcome this inadequacy of the above combination of references. However, as discussed above, none of the references, either singly or in combination disclose or suggest a controller which controls a movable light splitter to a semi-transparent state in the first position and a blocking state in the second position. Thus, for at least that reason, claim 1 is not rendered obvious by Morisawa, Hori, Sakaegi, or Shi, either singly or in combination.

Because claim 1 is not rendered obvious by any of the cited references, either singly or in any combination, claim 7, which depends therefrom is also not rendered obvious by any of the cited references, either singly or in any combination.

The Examiner has broadly interpreted the meaning of claims 4, 7, and 10 to mean a system as disclosed in Shi. Claims 4 and 7 depend from independent claim 1, which as discussed above, is not rendered obvious by any combination of the cited references. Claim 10 depends from independent claim 9. As discussed above, claim 9 is not rendered obvious by the cited combination of references in the rejection against it. Thus, their dependent claims are likewise not rendered obvious. As such, whether or not this interpretation of the claims is accurate, no amendment of these claims need be made at this time.

Accordingly, it is respectfully requested that the rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Morisawa in view of Hori, in further view of Sakaegi as applied to claim 6 above, and further in view of Shi, be reconsidered and withdrawn.

Allowable Subject Matter

Because the prior art does not teach or fairly suggest a method for a camera to maintain a light splitter at a second position for a specific time after the image sensor senses an image, during which time the light splitter provides a display that displays the image sensed by the image sensor, Claim 5 has been objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the based claim and any intervening claims. Claim 5 depends from claims 1 through claim 4. As discussed in greater detail above, claim 1 is not rendered obvious by any of the cited references, either singly or in combination, and is thus allowable over the cited references. Because claim 1 is allowable over the cited references, claim 5 should also be allowable. Therefore, claim 5 has not been rewritten in independent form.

Accordingly, based on the discussion above, it is respectfully requested that the objection to claim 5 be reconsidered and withdrawn.

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CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.


If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee,

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Respectfully submitted,

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